

palmar aponeurosis by the palmaris longus, otherwise, of course, the muscles could not produce a fold by their contraction. This article apparently excited very little interest, and it was not until four years later that Holtzinger¹ rediscovered it, apparently in ignorance of Stembo's work. He described the fold upon the ulnar surface of the hand, which, according to him, varies considerably in different people, being sometimes straight, sometimes arched, and agrees that it is produced by the contraction of the palmaris brevis. This contraction, he notes, is not the mere transient twitch such as occurs in tendon and periosteal reflexes, but is tetanic in character, lasting as long as pressure is continued, and varying directly with it in intensity. He also states that various parasthetic sensations are occasionally perceived on the ulnar side of the hand. If the irritation is continued for some time the contraction becomes intermittent—that is to say, there are a series of twitches. The reflex is usually best elicited by pressure upon the pisiform bone, but may also be caused by pressure upon the flexor tendon in the hand, by pressure upon the end of the little finger, and by passive abduction of the little finger. It is not produced, however, by mere cutaneous irritation. Holtzinger, therefore, concludes that this is not a cutaneous but rather a tendon reflex. It differs from other tendon reflexes in part by the fact that it is produced when the muscle is slightly relaxed, and in part by the fact that the contraction is tetanic and not clonic in character. Neither Stembo nor Holtzinger claim that it is of any pathological significance. In a number of cases in which I have tested this reflex upon normal and pathological cases I was unable to determine that it occurred in connection with any particular condition. In three cases of hemiplegia it occurred distinctly in one and not in the other two on the paralyzed side. In one case of hysteria and in one of neurasthenia it was quite distinct. It does not seem to occur more readily, however, in cases in which the tendon reflexes are exaggerated. Although I have no notes of my observations, it seems to be present in about half of all normal persons. It is possible that more extensive investigations in functional cases of nervous disease will indicate that it bears some relation to them. I have also observed that instead of a single fold there are usually several that pass obliquely along the ulnar side of the hand, corresponding to the structure of the muscle.

The new reflex for the year 1898 was the toe reflex described by Babanski.² It consisted in the discovery that in certain conditions the toes were extended (flexed dorsally) when the sole of the foot was irritated. It has been known for a long time that the retraction of the foot upon irritation of the sole—that is, the ordinary plantar reflex—was asso-

¹ *Neurologisches Centralblatt*, 1898, No. 19.

² *Progress Médicale*, 1898, p. 166.

ciated with plantar flexion of the toes. Babanski claimed that in disease of the pyramidal tracts irritation of the skin on the anterior portion of the sole, as by a needle prick, produced exactly the opposite effect—that is to say, the toes were extended—this movement being especially distinct in the great toe. He found this reflex in hemiplegia, in meningo-encephalitis, in epilepsy, transverse myelitis, and syringomyelia. It did not occur in neuroses nor in cases of peripheral neuritis, myelitis, nor in *tabes dorsalis*. Occasionally it was present in cases where the reflexes were greatly exaggerated. He also makes the interesting observation that it is ordinarily present in infancy, and contends that this supports his view regarding its relation to the pyramidal tract. In a later publication¹ he mentions that he observed the phenomenon in three cases of organic paraplegia, in one case of spinal hemiplegia, and in one case of *tabes dorsalis* with meningo-encephalitis. He reiterates that it is an indication of lesion of the pyramidal tract, and believes that it is particularly valuable in distinguishing hysterical from organic hemiplegia.

Cohn,² who had seen Babanski's article, and was astonished by his claim that the toe reflex was one of the earliest symptoms, if not the earliest symptom of lesion of the pyramidal tract, undertook some extensive observations concerning its occurrence. He calls attention to the fact that nearly all cutaneous reflexes are characterized by a movement of flexion, and accepts Gad's explanation that this is on account of the greater susceptibility of the flexor centres. He found that in about 60 per cent. of all cases irritation of the sole of the foot produced flexion, in about 20 per cent. extension, in about 10 per cent. no movement occurred, and in 10 per cent. the results were doubtful. Usually extension was restricted to the great toe. In children he concluded that no toe reflex at all occurred. In pathological cases he found extension in a number of cases in which the pyramidal tract was involved, but it did not occur in any cases of *tabes dorsalis* nor of polyneuritis. In cases of meningitis there was prompt flexion, and in one case of hysterical monoplegia there was extension of the toes. In neurasthenia no reflex occurred in about 40 per cent. of the cases. Cohn argues that if we accept Jendrassik's explanation of the cutaneous reflexes, that they have a longer or more complicated arc than is required for the tendon reflexes, we should expect, in disease of the pyramidal columns, a weakening rather than an exaggeration of the movement. It may be possible, however, to assume that weakening of the flexors or the removal of inhibition from the extensor centres actually does occur. He concludes, therefore, that Babanski's toe reflex,

¹ *La Semaine Méd.*, 1898, No. 40.

² *Neurologisches Central.*, 1899, No. 13.

although commonly occurring in cases of organic disease of the pyramidal columns, is not pathognomonic.

Schuler,¹ in view of the contradictory conclusions reached by Cohn and Babanski, undertook to test the subject thoroughly. He classifies his results according to the sexes. In men he found that in 80 per cent. of the cases there was flexion, in 6 per cent. extension of the great toe, in 2 per cent. extension of all the toes, and in 10 per cent. no reflex whatever; in 2 per cent. the results were doubtful. In women the results were practically the same, with the exception that extension occurred in only 4 per cent. of the cases examined, and an indefinite reflex in 6 per cent. In children flexion occurred in 30 per cent., extension in 12 per cent., indefinite reflex in 18 per cent., and no reflex whatever in 40 per cent. This 40 per cent. was made up especially of children less than one year of age, and seems to contradict Babanski's contention that in young children dorsal extension occurs. His general results seemed to be, however, more in accordance with Babinaki than with Cohn. In pathological cases the reflex was absent; in hysteria and tabes it was present in all cases with disease of the pyramidal tracts, and could be elicited by the slightest irritation. Schuler does not believe with Geigel and Cohn that this reflex depends upon alteration in the sensory conducting apparatus, for in six of his cases sensation was absolutely normal, and he concludes, therefore, that in difficult cases the toe reflex may be of value in discriminating between organic and functional disease. Personally, I have observed this reflex in one case of hemiplegia; in about forty other cases of various conditions, including neuroses with exaggerated reflexes, either flexion or no reflex occurred.

The pupillary reflexes have received a good deal of attention in the last year, and two forms that had been incompletely described, but were by no means generally known, have been investigated and analyzed. These are contraction associated with closure or attempted closure of the eye, described by Westphal and Piltz, and the so-called cortical or attention reflex (*Aufmerksamkeits reflex*), to which the latter has devoted two articles. Westphal² was led to investigate the eyelid phenomenon in Mendel's clinic by the discovery that the immobile and dilated pupils of a case of general paresis were strongly contracted when the patient made an effort to close the eyes against resistance. As a result of this he made a systematic examination of a great number of cases, in which the pupil did not react to light, and found that the phenomenon was practically constant. In order to determine whether this was not a very common associated movement, a number of healthy

¹ *Neurologisches Central.*, 1899, No. 13.

² *Ibid.*, 1899, No. 4.

persons and a number of persons suffering from functional nervous diseases with normally reacting pupils were also tested, and only in one case of hysteria was the symptom present. It is difficult to decide just what this pupillary reaction means. The fact that when the attempt is made to close the eye the eyeball rolls up and outward excludes the possibility of the influence of convergence or accommodation, and the latter is also rendered unlikely by the fact that in many of those eyes in which it appeared, reaction to accommodation is not present. Neither does it seem likely that alterations in the blood pressure are of any significance, for direct pressure upon the cornea does not cause the pupil to contract. Westphal, therefore, is compelled to believe with Bernhardt, that our knowledge of the association of the various nerve-tracts in the central nervous system is not sufficient to explain these various combined movements, but suggests the possibility that there is some connection between the cells of the facial nucleus that innervate the orbicularis oculi and those of the oculomotor nucleus that cause contraction of the iris.

One month later Piltz¹ published a paper, decorated with a long series of dates, with the object of showing that he had discovered this pupillary reflex some time before Westphal's publication. He first discovered it in the eyes of a case of general paresis with immobile pupils. When this patient was urged to close his eyes and then open them it was found that both pupils were in a state of marked contraction that lasted for an appreciable interval of time. When the same patient was directed to attempt to close the eyes against resistance, at the same time fixing some object, the pupils contracted still more vigorously. The application of homatropine, causing dilatation, or of eserine, causing contraction of the pupil, made the phenomenon disappear. As a result of this case Piltz made extensive investigations into the subject, testing the eyes of cases of general paresis, katatony, epilepsy, tabes dorsalis, blindness, and twenty-three healthy persons. He found the first reflex—that is, contraction of the pupils—after simple closure of the eyes, twenty-five times; nine of these patients had complete failure of reaction to light, ten had a slight reaction to light, and five a good reaction to light. It therefore follows that this reaction occurs chiefly in cases of interference with the light reflex, but not exclusively. The second reflex, simple narrowing of the pupils during an attempt to close the eyelids against resistance, occurred in forty-two of his series of cases; eleven of these had failure of reaction to light, twelve had slowly reacting pupils, and seventeen promptly reacting pupils. One case of general paresis with moderately dilated pupils that had failed to react to light

¹ Neurologisches Centralblatt, No. 6.

did not present the symptom. In one case of locomotor ataxia, blind as a result of optic atrophy, the reflex was consensual. In one case of complete oculomotor paresis with immobile pupils both reactions were present and prompt. Piltz calls attention to the fact that this phenomenon was suggested in Wundt's text-book as early as 1880, and was more completely described by Gifford in 1895, but neither communication appears to have attracted general attention.

In a paper published some time later Mingazzini¹ claimed priority of the discovery of this reaction for his colleague Galassi, who observed the reflex in 1887, and called it the eyelid reaction of the pupils. The first patient had immobility of the pupils; when she closed her eyes and then opened them the left pupil was found strongly contracted, and it also contracted when the eyelids were held apart and the patient attempted to close them. In a second case, in which this phenomenon occurred in the right eye, the autopsy revealed a chronic thickening in the extradural portion of the oculomotor nerve, apparently caused by a deformity in the dorsum sellæ and irritation by the right posterior clinoid process. Galassi's theory was that the phenomenon occurred as a result of associated muscular action, and gave the following explanation of its occurrence when the light and accommodation reflexes were lost, admitting that voluntary impulses may be transmitted through a degenerated nerve before merely reflex impulses. He supposes that the vigorous innervation of the orbicularis palpebrum is accompanied by irritation of the pupillary contracting centre in the oculomotor, causing narrowing of the pupil in cases in which, as his autopsy showed, the oculomotor is so degenerated that the ordinary impulses do not pass. In addition, he assumed a degenerated condition of the smooth muscle fibres of the pupillary sphincter, producing in them a state of exaggerated irritability. He was convinced that this probably occurred, and that the condition was progressive, because in the case in which the phenomenon was first observed by him, it diminished markedly in the course of time, probably as a result of further degeneration of the muscle. He also believed that this reaction was found occasionally in normal eyes. I have observed this reflex in a case of general paralysis in which, however, the light reflex was present.

The cortical reflex described by Piltz is interesting, because it proves that the activity of the higher psychical centres has an influence upon the size of the pupil, and may be exerted voluntarily. Of course, it has been known for a long time that in emotional states the pupils commonly dilate. Piltz² has shown that for the pupillary reflexes, as well as for the tendon reflexes, there are at least two arcs concerned—

¹ Neurologisches Centralbl., 1899, No. 11.

² Ibid., 1899, No. 1.

an upper and a lower one. The experiments were carried on in a variety of ways. The patient, who was placed in a moderately illuminated room, fixed a point upon the opposite wall, and then had placed at the periphery of the field of vision a bright and a dark object. Without changing the direction of his glance, he turned his attention alternately first to one and then to the other, and the observer noted that the pupils became narrower when the attention was directed to the bright object, and wider when it was directed to the dark object. Piltz then undertook to determine whether the mere imaginary presentation of a light or a dark object could have any influence upon the pupil, and found that when the subject was educated to the point of fixing his attention vigorously upon some such imaginary object the pupil underwent dilatation or contraction, according as the object was dark or light. These changes could not be due to circulatory disturbance, because the artificial production of alterations in the amount of blood in the iris had no effect whatever. In a subsequent paper¹ he repeated the latter series of experiments, and with a well-educated subject the results were invariably the same, and were not influenced by the distance of the fixation point, which varied from 20 cm. to infinity. In order to exclude any possible error, the observer and the subject registered simultaneously upon a moving drum, the former the actual alterations in the size of the pupils, the latter his subjective representations. Haab admits the conclusive nature of the proof of a higher reflex arc—that is, of fibres going from the cortex to the oculomotor nucleus—and Piltz believes that a discovery made a year ago by himself, that there exists in the cortex of the rabbit a centre for the unilateral contralateral contraction of the pupil, indicates the existence of such cortical fibres.

¹ *Neurologisches Centralblatt*, 1899, No. 11.

REVIEWS.

LECONS DE CLINIQUE CHIRURGICALE. Traites a L'hotel-Dieu. (LESSONS ON CLINICAL SURGERY.) Par PIERRE DELBET. Paris: G. Steinheil.

THIS volume contains twenty clinical lectures delivered at the Hôtel Dieu, lectures which treat most entertainingly and instructively of a great variety of subjects, and in which these subjects are presented in that clear, precise, and beautiful style which is characteristic of the writers of France. The following subjects are discussed: Uranoplasty, complications of otitis media, congenital thyro-hyoidean cysts, impassable stricture of the œsophagus, the diagnosis of incipient Pott's disease, fracture of the vertebral column, cirroid aneurism, carpus curvus, retardation of the palmar aponeurosis, part played by valvular insufficiency in the internal saphenous vein in the production of varicose veins of the lower extremity, Dupuytren's fracture, intestinal obstruction produced by twisting of the mesentery, chronic and incomplete intestinal obstruction, treatment of hydatid cysts of the abdomen, appendicitis and salpingitis, and the treatment of appendicitis.

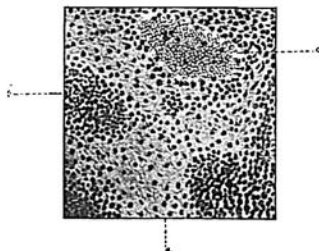
In cleft palate the author is opposed to a very late or a very early operation, and prefers to operate between the sixth and seventh year. He does not approve of the early operation, which is so strongly and to our mind so convincingly advocated by Edmund Owen. Owen maintains that if operation is delayed until the habit of imperfect speech is formed that the closure of the cleft will not correct the speech defect, a view which seems reasonable, to say the least. Delbet opposes operation during the second or third year, maintaining that in these early operations there is a greater mortality, no better, and possibly a worse, phonetic result, such failure being due to the extreme difficulty of operating in the very young, and the liability to subsequent maxillary atrophy. He approves of Le Dentu's dictum, that is, "I admit one could perform urano-staphylorrhaphy or staphylorrhaphy upon robust individuals, at a little more tender age than six or seven years, but I would not willingly risk doing it on a person of less than five years, or, at the extreme, four years of age." Delbet operates by the double bridge method of Diefenbach, and exactly follows the technique of Trélat.

In discussing otitis media he offers the following suggestive hint: If an individual, comatose or semi-comatose, is brought into the hospital, if you can obtain no accurate history of the patient, and can extract no information from him, think of the possibility of an auricular origin, and at once examine the ear. If it is of auricular origin you will often find a flow of pus from the ear—often, but not always, because in some cases the flow of pus ceases when the mastoiditis begins. This is because the swelling of the mucous membrane blocks the aditus. Hence, a dry ear does not prove that the origin of the condition is not

mammary and axillary glands. Although slightly fibrous in character, it most resembles a lymphatic structure.

Histology. Spleen: The majority of the Malpighian corpuscles show only slight alterations. Many appear normal; others present a slight increase in the reticular tissue, and now and then a Malpighian body is found which shows considerable sclerosis. No marked degenerative changes are to be seen in the cells. The veins show a moderate increase

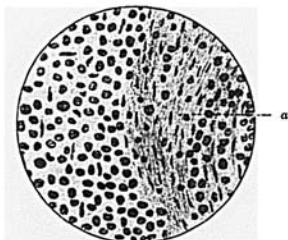
FIG. 1.



a. Connective tissue invading pulp. b. Group of lymphoid cells surrounded by connective tissue. c. Splenic vein.

in the connective tissue which surrounds them; areas are found where this increase is very marked. Fibrous tissues extend some distance into the splenic pulp, enclosing within its meshes lymphoid cells, isolated and in groups (see Fig. 1). In many places the pulp appears normal; however, in general it is apparent that the reticulum is con-

FIG. 2.



Splenic pulp, showing area in which the reticulum is fibrous. a. Lymphoid cells.

FIG. 3.



Liver.

siderably increased. Now and then are to be found areas of marked sclerosis containing lymphoid cells in the meshes of the fibrous tissue (see Fig. 2). Nowhere in the spleen are signs of acute inflammation